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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,133	09/10/2004	Tetsutaro Inoue	0020-5295PUS1	2676

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EXAMINER
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BERNATZ, KEVIN M

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 03/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/507,133	<b>Applicant(s)</b> INOUE ET AL.	
	<b>Examiner</b> Kevin M. Bernatz	<b>Art Unit</b> 1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Examiner's Comments***

1. The Examiner notes that claims 8 and 9 are product claims directed to a patentably distinct product in the pre-amble of the claims (i.e. "magnetic tape cartridge" and "audio tape, video tape, or computer tape". However, because these claims do not represent an undo burden to examination, no restriction has been made. Amendment of any claims to include additional non-nominal product limitations *directed to a product other than a "magnetic tape" as in claim 1* that would represent an undo burden may result in restriction due to original presentation.

### ***Response to Amendment***

2. Amendments to claim 1 and addition of claims 8 - 10, filed on December 28, 2005, have been entered in the above-identified application.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Specification***

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Magnetic Tape Including an Intermediate Layer Consisting Essentially of a Binder".

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

***The abstract should be in narrative form and generally limited to a single paragraph within the range of 50 to 150 words (37 CFR 1.72). See MPEP § 608.01(b).***

The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 3 – 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (U.S. Patent No. 6,284,361 B1) in view of Eichorst (U.S. Patent

No. 5,726,001), Yamaguchi et al. (U.S. Patent No. 4,617,226) and Zinbo (U.S. Patent No. 6,312,796 B1).

Regarding claim 1, Kobayashi et al. disclose a magnetic tape (*col. 1, lines 6 – 15*) comprising a lower non-magnetic layer containing non-magnetic powder and a binder (*col. 2, lines 51 – 60*), and an upper magnetic layer containing ferromagnetic powder and a binder (*ibid*), wherein the lower non-magnetic layer is formed on a surface of a tape-form non-magnetic support (*ibid and col. 7, lines 35 - 47*), wherein the average dry thickness d of the upper magnetic layer is 5 to 100 nm (*col. 5, lines 6 – 8*).

Kobayashi et al. fail to disclose an intermediate layer consisting essentially of a binder provided just under the upper magnetic layer.

However, Eichorst teaches a very thin adhesion layer consisting essentially of a binder for promoting adhesion between the magnetic layer and non-magnetic underlayers including non-magnetic powders and a binder in order to prevent the magnetic layer from delaminating (*col. 5, lines 32 – 54; col. 7, lines 37 – 67; col. 12, lines 15 – 43; and col. 14, lines 17 – 23*). While Eichorst is directed to imaging elements utilizing a transparent magnetic layer (*Title and col. 12, lines 14 – 44*), the Examiner notes that one of ordinary skill in the art would clearly recognize that the two fields of endeavor are analogous (*Eichorst, col. 12, lines 38 – 39; and see Yamaguchi et al., entire reference, which teaches a substantially identical structure as Eichorst in that an electro-conductive layer comprising carbon black is located between the substrate and the magnetic layer for prevention of static charge build up*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kobayashi et al. to include an intermediate layer meeting applicants' claimed structural location as taught by Eichorst since such a layer can help to prevent the magnetic layer from delaminating.

Regarding the limitation(s) "is provided on the intermediate layer in a wet state", the Examiner notes that this limitation(s) are/(is a) process limitation(s) and is/are not further limiting in terms of the structure resulting from the claimed process. Specifically, in a product claim, as long as the prior art product meets the claimed structural limitations, the method by which the product is formed is not germane to the determination of patentability of the product unless an unobvious difference can be shown to result from the claimed process limitations. In the instant case, regardless of whether the layers are formed in a wet-on-wet state or a dry state (both of which are known in the art), the final structure of the product will be substantially identical.

Regarding the thickness of the intermediate binder layer, Eichorst teaches that the thickness can be varied to effect the adhesion strength and it is known in the art that the overall thickness of a tape impacts the amount of tape capable of being stored in a reel (i.e. the thicker the tape, the less that can be rolled up on a fixed size reel) (*Eichorst*, col. 5, lines 32 – 54; col. 7, lines 37 – 67; col. 12, lines 15 – 43; col. 14, lines 17 – 23; col. 15, lines 23 – 29; and *Examples* ). Therefore, the Examiner deems that it would have been obvious to one having ordinary skill in the art to determine a thickness of the intermediate layer meeting applicants' claimed thickness limitation by optimizing the results effective variable through routine experimentation. *In re Boesch*, 205 USPQ

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215 (CCPA 1980); *In re Geisler*, 116 F. 3d 1465, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Aller*, 220 F.2d, 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Neither Kobayashi et al. nor Eichorst disclose a squareness ratio (SR) of the magnetic layer meeting applicants' claimed limitation.

However, Zinbo teaches that SR's meeting applicants' claimed magnitude are known to be utilized in binder-particle magnetic recording media in order to form high density magnetic tapes (*col. 3, lines 56 – 65; col. 9, lines 37 – 46; col. 19, lines 8 – 48; and Table 2*).

It would, therefore, have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device of Kobayashi et al. in view of Eichorst to insure that the magnetic layer possessed a SR meeting applicants' claimed limitation as taught by Zinbo since such a property is known to be required to form a high density magnetic recording medium.

Regarding claim 3, Eichorst discloses binders meeting applicants' claimed limitations (*Examples*)

Regarding claims 4 and 5, these limitations are process limitations and are not further limiting in so far as the structure of the product is concerned for the reasons noted above. Furthermore, Eichorst discloses that the layers possess excellent dry or wet state adhesion, thus leading them to be suitable for deposition in both a wet or dry state (*col. 16, lines 21 – 49*).

Regarding claim 6, Kobayashi et al. teach controlling the surface roughness of the magnetic layer to values meeting applicants' claimed limitations (*Table 1*).

Regarding claim 7, Zinbo teaches Br values meeting applicants' claimed range for the formation of high density recording media (*Table 1, where the Examiner notes that  $SR = Br/Bm$ , so  $Br = SR * Bm$* ).

Regarding claims 8 and 9, the tapes disclosed by Kobayashi et al. are deemed to meet the claimed pre-amble limitations since they can clearly be placed inside a tape cartridge and could be used to store audio, video or computer data. Essentially, these claims are being interpreted in a manner similar to an intended use claim. Note that "in apparatus, article, and composition claims, intended use must result in a **structural difference** between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. **If the prior art structure is capable of performing the intended use, then it meets the claim.** In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art." [emphasis added] *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); *In re Otto*, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963). See MPEP § 2111.02.

Regarding claim 10, Kobayashi et al. disclose non-magnetic powders meeting applicants' claimed size range (*col. 6, lines 19 – 38*).

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of Eichorst, Yamaguchi et al. and Zinbo as applied above, and further in view of Kolb et al. (U.S. Patent No. 6,733,906 B2).



Kobayashi et al., Eichorst, Yamaguchi et al. and Zinbo are relied upon as described above.

None of the above disclose controlling the fluctuations to meet applicants' claimed limitations, though the Examiner notes that Kobayashi et al. recognizes the need to insure low fluctuations at the interface between the magnetic layer and the layer upon which it is deposited (*col. 9, lines 42 – 54*).

However, Kolb et al. teach that one can regulate the rheological properties of the deposited layers in order to insure minimizing the fluctuations at the interface of a magnetic layer and a prior deposited layer, which leads to improved recording performance (*col. 1, lines 60 – 65; col. 2, lines 3 – 55; col. 13, lines 38 – 44; Experiments; and Claims 61 – 63*).

It would therefore have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the device to minimize the fluctuations at the interface between the magnetic layer and the intermediate layer, hence meeting applicants' claimed range limitations, as taught by Kolb et al. in order to lead to a tape having improved recording performance.

### ***Response to Arguments***

#### **9. The rejection of claims 1 - 10 under 35 U.S.C § 103(a) – Kobayashi et al. in view of various references**

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection. In so far as they apply to the rejection of record, applicants

argue that the current claimed invention has unexpected superiority versus the prior art invention (*pages 8 – 10 of response*). The Examiner respectfully disagrees.

The Examiner notes that fluctuations are known to be detrimental in the art of magnetic recording since they lead to non-uniformity and poor recording performance (*see Kobayashi et al. and Kolb et al. citations above*). Furthermore, the Examiner notes that the thickness values of the intermediate layer appear to be clearly taught by Eichorst and applicants are invited to present evidence that the layers taught by Eichorst would not provide the alleged improvement.

### ***Conclusion***

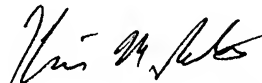
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JP 63-004415 A discloses a recording medium possessing a structure substantially identical to applicants' claimed structure (*see provided Derwent Abstract*). Inaba et al. (U.S. Patent No. 6,074,724) teach that  $SR = Br/Bm$  (*col. 25, lines 40 – 50*).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Bernatz whose telephone number is (571) 272-1505. The examiner can normally be reached on M-F, 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney can be reached on (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KMB  
March 15, 2006



Kevin M. Bernatz, PhD  
Primary Examiner